Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics Open Access
Volume 789, 10 February 2019, Pages 643-665

Non-Gaussian elliptic-flow fluctuations in PbPb collisions at s_{NN} =5.02TeV (Article) (Open Access)

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Abstract

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Event-by-event fluctuations in the elliptic-flow coefficient v_2 are studied in PbPb collisions at s_{NN} =5.02 TeV using the CMS detector at the CERN LHC. Elliptic-flow probability distributions $p(v_2)$ for charged particles with transverse momentum $0.3<p_T<3.0$GeV/c and pseudorapidity $|\eta|<1.0$ are determined for different collision centrality classes. The moments of the $p(v_2)$ distributions are used to calculate the v_2 coefficients based on cumulant orders 2, 4, 6, and 8. A rank ordering of the higher-order cumulant results and nonzero standardized skewness values obtained for the $p(v_2)$ distributions indicate non-Gaussian initial-state fluctuations . Bessel–Gaussian and elliptic power fits to the flow distributions are studied to characterize the initial-state spatial anisotropy.

SciVal Topic Prominence

Topic: collisions | ionic collisions | viscous hydrodynamics

Prominence percentile: 99.246

Author keywords

Event-by-event elliptic flow | Non-Gaussian flow fluctuations | Unfolding

Funding details

Funding sponsor	Funding number	Acronym
California Earthquake Authority		
European Regional Development Fund		
Ministry of Education and Science		

ISSN: 03702693
CODEN: PYLBA
Source Type: Journal
Original language: English
DOI: 10.1016/j.physletb.2018.11.063
Document Type: Article
Publisher: Elsevier B.V.

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